Origins43

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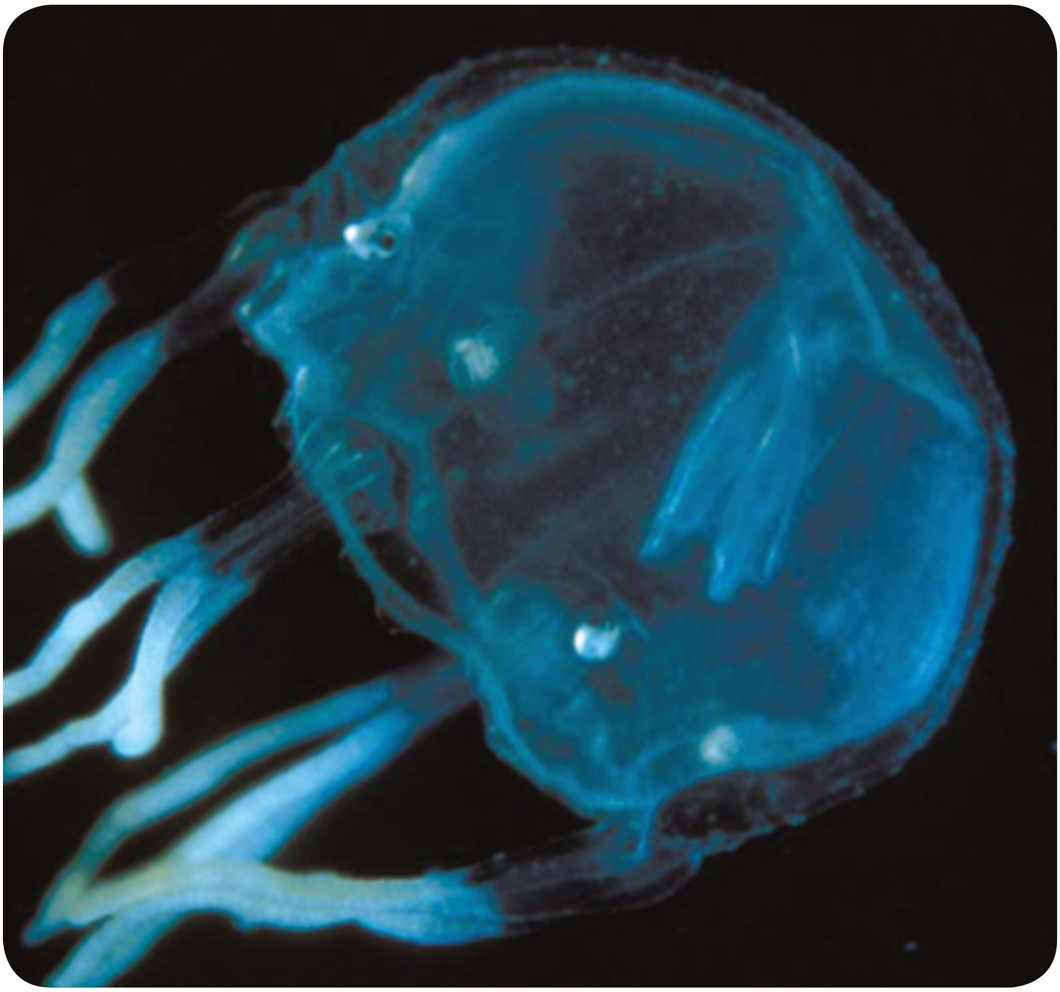

Editorial: Life According to Attenborough

Paul Garner

In November 2005, the iconic figure of Sir David Attenborough returned to our television screens to present yet another ground-breaking natural history series. *Life in the Undergrowth* is a dazzling tour through the world of the land-living invertebrates – insects, bugs, spiders and worms. As we have come to expect from previous *Life* series, it is a visual treat. Miniature cameras no larger than a seed allow us to view the world from the perspective of the creatures being observed. Furthermore, the sensitivity of the new equipment avoids the problem of having to drench the tiny animals with so much light that they are 'fried' or behave unnaturally.

The latest technology has been employed to great effect to bring us never-before-seen wildlife photography. There are amazing shots of leopard slugs mating while hanging from a slimy thread, velvet worms giving birth through their mouths, giant centipedes catching and eating bats in a Venezuelan cave, ants 'milking' treehopper bugs for honeydew, and tiny wasps that 'fly' underwater with feathery wings. Truly we can say with the Psalmist, "O Lord, how manifold are thy works! in wisdom hast thou made them all: the earth is full of thy riches" (Psalm 104:24).

Nevertheless, we ought to keep in mind that Sir David's new series, awe-inspiring though it is, presents us with a worldview that is foreign to the Bible:

- *Sir David's world is one in which solely natural processes – mutation and selection – are regarded as sufficient to explain all the diversity of life that we see around us.* His commentary is revealing: "Eventually larger animals appeared…", "Some enterprising creatures found it safer to lay their eggs out of the sea…", "Simple plants began to advance over the mud…". The precise details of how evolution brought about these remarkable transformations is never addressed – but many viewers will accept, on Sir David's authority, that this is how it *must* have happened. We might say that this is evolution of the "with-one-bound-he-was-free" variety! But there is no room in this materialistic worldview for design; it is not even considered a possibility.
- *Sir David's world is one in which death, bloodshed and cruelty are regarded as a normal part of the natural world from the beginning.* This is how the world is and always has been. *The Sydney Morning Herald* (25 March 2003) reported Sir David saying: "When Creationists talk about God creating every individual species as a separate act, they always instance hummingbirds, or orchids, sunflowers and beautiful things. But I tend to think instead of a parasitic worm that is boring through the eye of a boy sitting on the bank of a river in West Africa, that's going to make him blind. And I ask the creationists, 'Are you telling me that the God you believe in, who you also say is an all-merciful God, who cares for each one of us individually, are you saying that God created this worm that can live in no other way than in an innocent child's eyeball? Because that doesn't seem to me to coincide with a God who's full of mercy'." But Sir David, like Charles Darwin before him, has forgotten the Bible's account of the Fall of Man, which brought the curse of death upon the creation. This is a world that has been marred and spoilt by human sin – and disease-causing organisms are just one manifestation of that awful reality.
- *Sir David's world is one in which man is just another animal – in fact, an animal the world would be better off without.* In an interview with *The Daily Telegraph* (12 November 2005), Sir David said, "I am afraid it is a bit of a cliché of mine, but if we disappeared overnight, the world would probably be better off; but if they [*i.e. the invertebrates*] disappeared overnight, the world would come to an end." It is a tragic irony that Sir David's humanistic outlook is ultimately self-destructive and results in such a low view of mankind. One wonders what motivation there is in such a worldview for care, charity or compassion towards other human beings. How different is the Bible's perspective on man! The Scripture tells us that man has been made "a little lower than the angels" and is crowned with glory and honour (Psalm 8:5). He is *not* just another animal – but the very image of his Creator. As such we have a duty of care and responsibility for one another and for the amazing world into which God has placed us.

So as we watch *Life in the Undergrowth* and marvel at the stunning photography, let us also remember to praise and glorify our Maker. Let us remember that this is God's world – a product of plan and purpose, not chance and necessity. Let us remember the terrible consequences of human sin – the true origin of death and suffering. And, finally, let us remember that we are special to God – so much so that He sent His only begotten Son into this sin-cursed world to redeem a people for Himself. It's probably going to be a long time before the BBC makes a natural history series based upon the Bible's worldview – but in the meantime you can at least read the book. ■

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Life in focus: a scientist looks at 'intelligent design'

David J. Tyler

As a boy, I was able to use a microscope to explore the world around me. It was fascinating to look at printing in books. Under magnification, the letters are no longer crisp and well-formed. Printed pictures are a chaotic mixture of coloured dots. A razor blade has such a jagged edge that it is amazing it can cut at all!

By contrast, living things reveal exquisite details that are unsuspected without magnification. The eye of a fly, the texture of a leaf, the surface of a butterfly wing – these evoke a growing sense of wonder as we uncover new levels of detail. The contrast with man-made objects could hardly be missed!

Looking deeper

Our understanding of the natural world has continued to grow as scientists have painstakingly explored more and more of these levels of detail. The human body, for example, is an extraordinary system of interdependent parts. Whether we look at the workings of the eye, the ear, the liver, the kidneys or the heart, the closer we look the more we find systems so complex and intricate that they boggle our minds.

Looking deeper still, we find that every living cell is a marvel of miniaturisation. Each cell has the molecular equipment to carry out a wide variety of tasks, including the amazing ability to replicate itself. The component parts of cells have all been studied in great detail, only to find more and more evidence of complexity.

When Charles Darwin proposed his views on origins, the cell was thought to be nothing more than a blob of jelly – a simple building block of life. At that time, many found no reasons to doubt Darwin's mechanisms for evolutionary change.

However, as scientists got to work with microscopes and other tools, the huge complexity of the living cell emerged. Nevertheless, these scientists were so well schooled in evolutionary theory that they never lost faith – if they looked closely enough, they reasoned, ultimately they would find simplicity.

Molecular machines

Today we know better. Living cells are described as nanotechnology factories, packed with molecular machinery, with vast numbers of different processes going on in a harmonious way. New revelations about cell complexity continue to be announced and they often lead to expressions of astonishment by the researchers involved.

An enormous change of gear in thinking came with the discovery in 1953 of the cell's information system. The genetic code is built into the structure of the DNA molecules that lie at the heart of every living cell.

Chemical units ('nucleotides') of four different kinds are arranged along each DNA molecule. Their function is analogous to the letters of the alphabet. Just as a sequence of letters is used to construct words and then meaningful sentences, so these chemical units arranged in appropriate sequences are used as a template – from which the proteins needed by the cell can be copied.

Just as the arrangement of alphabetical letters on this page constitute a code spelling out a message that you can read and (hopefully!) understand, so the nucleotide sequence strung along the DNA molecule is a code that spells out a meaningful message. Of course, the code has to be read and decoded before it can be used to control actions within the cell. Molecular biologists are only just beginning to work out what is going on.

Codes and computers

The codes we meet most frequently today are computer codes. Intelligent programmers convert real-world problems into a code that is then fed into the computer system. Indeed, both software and hardware have to be intelligently designed, otherwise they would not work together.

The analogy with the genetic code is very close – the biological molecules within the cell are the 'hardware', while the encoded genetic information is equivalent to the 'software'.

In our daily lives, whenever we see coding, transmission and decoding taking place, we know that someone has sent a message. A simple example is making a telephone call. You dial a number (a code) which is transmitted to the telephone exchange and interpreted (decoded) as the telephonic location of the person you are calling. Using that information it rings the phone you are calling, and you know the rest.

Not just noise

The existence of a code points clearly to an intelligent agent at work. Codes do not just 'happen', they have to be designed. One vastly expensive research project is built on this premise – SETI, the Search for Extra-Terrestrial Intelligence.

Huge sums of money are being spent to employ powerful radio-telescopes to search for signals from intelligent life beyond earth. How do scientists hope to distinguish intelligent communication from all the radio 'noise' from outer space? By discovering signals containing – you guessed it – coded information!

Since, by common consent, coded signals point to intelligence, why should biology be any different? Within every living thing there exists an extraordinarily rich and complex coded system. Why should all that have happened just by chance?

No explanation

After enormous effort by the best scientific brains, using advanced technologies, we are just beginning to discover how the genetic code works. The closer we look, the more pointers we find to intelligent design.

For example, the discovery of cases where more than one message is encoded in the same DNA sequence reveals unexpected sophistication. Another example is the mechanism that repairs faulty copying. All these findings provide powerful evidence that an intelligent Designer has been at work.

No one has yet proposed a coherent explanation of how such a complex coding-transmission-decoding system could arise by natural processes alone. Nevertheless, evolutionists persist in their view that, one day, an explanation will be found. It is a case of taking an 'evolutionary belief' position contrary to clear scientific evidences of design.

Russian doll

Over the years, discovery of complexity within complexity made the Darwinian approach to biology less and less convincing. Nevertheless, people held on to the theory, thinking that it could be rescued if simplicity were found at the most fundamental level of living things. Any such hope has now vanished.

It is as if biologists have been given a Russian doll to examine. Open the case of the outer doll and another is found inside. Split that apart and yet another pops out. Molecular biology has now probed the most fundamental level of biological structure possible – the molecules themselves – and still there is no simplicity.

Gradual transformation from simple to complex (as taught by Darwinism) will always be a problem as long as organisms are found to be sophisticated. Darwinists need to find the equivalent of a doll that has something inside that will allow their gradualistic mechanisms to work.

Hallmark of design

What have researchers found? Have they uncovered at the molecular level some simple system on which Darwinian mechanisms could operate? Or is the final doll of the set empty, forever blocking Darwinian-type transformation?

Darwinism has always claimed to explain the origin of complexity. However, the more scientists look at the data the less it appears that evolutionary theory has anything helpful to say on this subject.

Returning to the Russian doll analogy, the last doll of the set has been opened by the molecular biologists. It is empty. There is nothing at the core that can be described as simple.

Complexity exists wherever we look in living things. Consequently, there is no level at which Darwinian processes of transformation can work. This complexity is a major hallmark of design.

The Master's handiwork

Believing the Bible does not mean that we become irrational. The Bible portrays the Christian as one who has been renewed in his or her mind – who has come out of darkness into the light. Included in this mental renewal is a right understanding of the world around us. Here we see the handiwork of our Creator God.

And consider this. If God indeed constructed the genetic code, with all its intricacy and information content, can he not also communicate life-transforming truth to human beings? The Christian faith is concerned with God's speaking directly to our world.

He used prophets and teachers to bring his message to mankind in the form of the Holy Scriptures. Supremely, he has come himself in the Person of Jesus Christ. Jesus said, "Anyone who has seen me has seen the Father" (John 14:9).

The apostle Paul writes that God's invisible qualities (his eternal power and divine nature) "have been clearly seen, being understood from what has been made" (Romans 1:20). What was apparent in Paul's day is even clearer today, knowing as we do so much more about the things that have been made.

Animals and plants are revealed to be the handiwork of a Master Craftsman, who is wise, powerful and divine. "How many are your works, O LORD! In wisdom you made them all; the earth is full of your creatures" (Psalm 104:24). ■

Recommended reading

For further reading see the author's book *The Guide: Creation – Chance or Design?* published by Evangelical Press (available from bookshops or from sales@evangelicalpress.org).

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Proof-reading and origins

J. H. John Peet

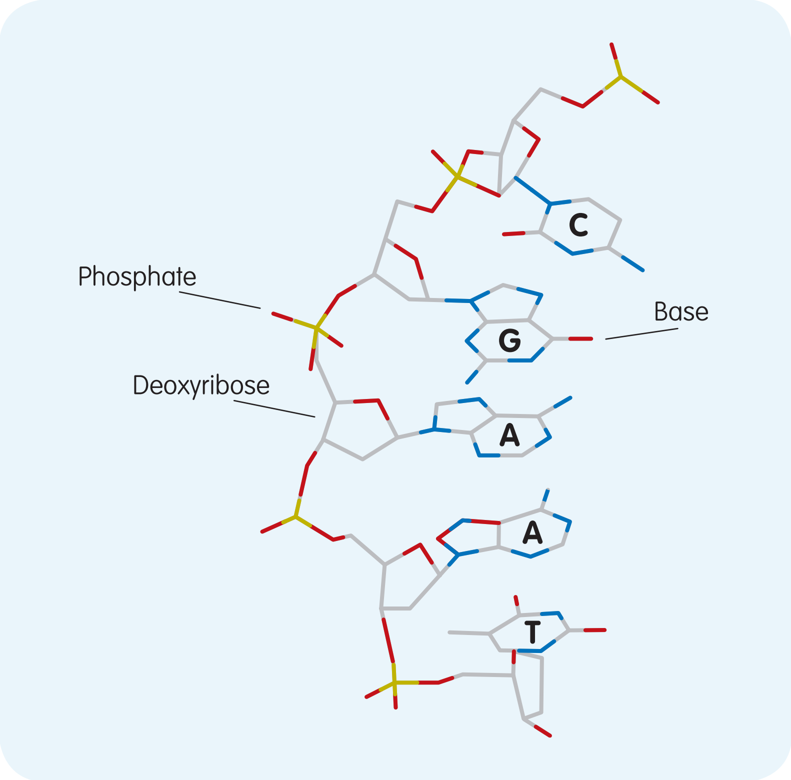

Figure 1. The structure of the DNA molecule.

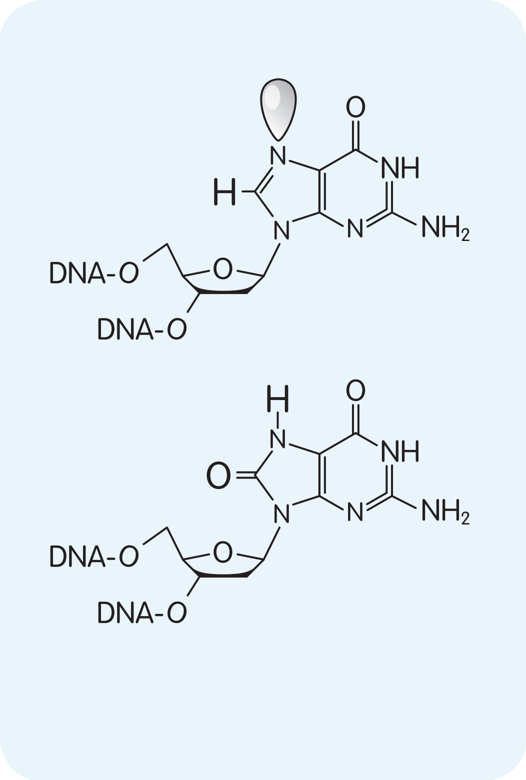

Figure 3. The chemical structures of guanine (top) and oxoguanine (bottom).

One of the classic problems for the scientist looking for a naturalistic explanation for the origin of life is that the atmosphere had to be oxygen-free. Any organic compound exposed to an oxygenated atmosphere for a significant period of time will be destroyed. It is one of the processes that occurs when we die; our organic chemicals are broken down to carbon dioxide and water.

The process is achieved by the formation of 'free radicals' which are highly active forms of oxygen. There are 100,000 oxygen 'free radicals' attacking the cell every day, the number being enhanced through effects such as cigarette smoking and radiation. This process is so fast that it can even affect the DNA in our body when the bases are exposed during duplication prior to cell division. The DNA molecule (the chemical component of our genes) consists of a 'back-bone' of phosphate and deoxyribose (sugar) molecules to which are attached four bases: adenine (A), guanine (G), cytosine (C) and thymine (T). It is the sequence of those four bases that forms the code for the synthesis of the proteins required by our body (**Figure 1**).

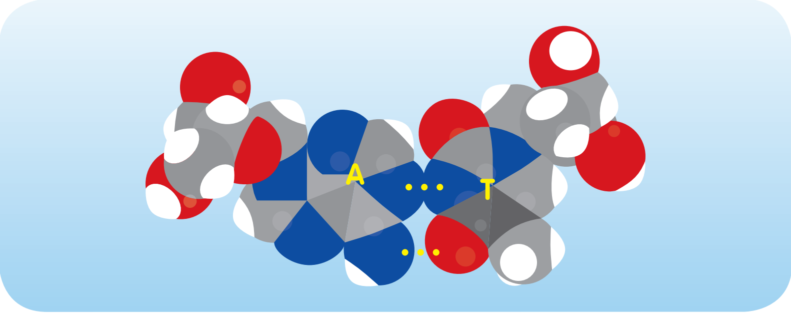

Figure 2. The link between adenine and thymine.

The DNA consists of a double strand (which protects it against such oxidation until it is opened for transcription to RNA for protein synthesis). The bases pair off between the strands in a very specific way, *viz* G with C and A with T. This pairing is controlled by the shapes of each base. **Figure 2** shows how A and T fit together neatly (the yellow dots represent 'hydrogen bonds' which are crucial to the shape of the DNA molecule).

During replication, the guanine base can be oxidised by the oxygen free radicals, giving oxoguanine. When the G base is oxidised, instead of pairing with the C base, the change in structure (**Figure 3**) can cause it to pair with A instead. The result is that the next time it is transcribed into RNA and protein, the coding is wrong and can result in an incorrect protein sequence with potentially serious consequences. This is the second most common mutation found in cancers.

Since we are continually breathing in oxygen, the probability of this oxygenation of the guanine is high. That sounds like 'bad design'. However, there is a protection system in place. Many of these free radicals are mopped up by antioxidants such as vitamins C and E, but some slip through and reach the DNA.

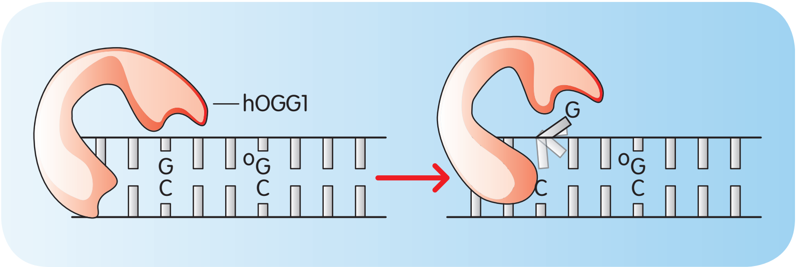

Figure 4. hOGG1 recognises a correct G structure.

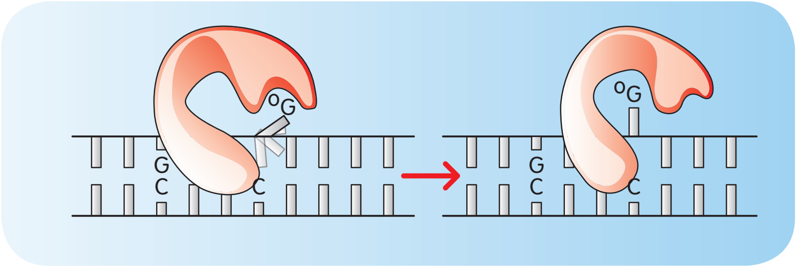

Figure 5. hOGG1 locates the oxoG structure.

This article will have been through a typing stage and then proof-reading – we hope that you will not find any typographical errors! The same principle applies in the cell. As the DNA is replicated, there is a complex proof-reading process in action. There are several of these, just as we will use several proof-readers who often pick up on different errors. We describe here one of those remarkable systems.

The key is an enzyme called hOGG1 (pronounced 'hog one'). Professor Verdine and his colleagues have been studying this process in detail. Its function is to locate the damage and remove it. In some brilliant work published in 2005, they have been able to trap the hOGG1 in action and so take an X-ray diffraction pattern of the complex.

The hOGG1 enzyme scans the DNA strand looking for guanine (**Figure 4**). It is able to examine each base in turn. The G fragment fits neatly into the small pocket at the end of the enzyme. This indicates that the structure is in order and the enzyme moves on.

If it locates an incorrect formulation, the oxoG, this will only fit into the larger pocket (**Figure 5**). The shape of the enzyme is very precise and the oxoG fits into the socket like a key into a lock. The 'tail' of the enzyme links to the C in the second chain. It is this precise bridging that enables the proof-reading process to be conducted with great precision. Once the oxoG is locked into the enzyme, it is snipped out. The process is known as 'base excision repair' (BER).

If the oxoG has already linked with an alternative partner (A), as mentioned above, the excision does not occur. But another enzyme will recognise the misplaced A, replace it with a C, and the hOGG1 enzyme can now function on it.

It has been found from this work that around two-thirds of lung cancers result from the gene producing this enzyme having been lost, so preventing the removal of the oxoG. Another mutation in that gene makes the hOGG1 unstable, so deteriorating with time; this is a cause of aging.

As a footnote, consider the 'chicken and egg' situation implied in this. The process of DNA-RNA-protein transcription is to produce a protein (in fact, hundreds of them). The enzyme hOGG1 is a protein that has to be produced (by a gene on chromosome 3). Where is the evolutionary scheme that could have produced this highly precise complex molecule before the DNA was formed to produce it? The problem can be extended when we consider the number of proteins for the replication system itself (see the article in this issue reporting on Dr Geoff Barnard's *Genesis Agendum* lecture).

Further reading

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Teaching evolution in a Christian school

Sylvia Baker

A big dispute hits the headlines

In March 2002, the media in the UK discovered that Emmanuel College, Gateshead, a state school in the north of England, was teaching creationism as part of its curriculum. A furore broke out! There were newspaper articles, TV interviews, questions asked in Parliament. The tone at times was quite hysterical. What was it all about?

The great majority of the articles proved that this dispute is not widely understood, even in England, the home of Charles Darwin. The impression given was that a group of half-wits had infiltrated, and were threatening to damage, an outstanding institution. In fact, the excellence of Emmanuel College stems from its Christian basis, of which creationism is a foundational aspect. For evolution to be taught successfully within a Christian school context, Christian teachers themselves need to understand better why confusion often arises within this debate.

The wider issue

Chris Stringer, head of human origins at the Natural History Museum in London, made a contribution to the debate. He said, "I believe that the proper teaching of science, and particularly biology, cannot take place under religious interference. These subjects should be kept quite separate." This statement reveals a fundamental misunderstanding about the nature of the creation/evolution debate. It assumes that evolution is a neutral view of origins, developed by unbiased scientists working with compelling facts. In reality, the theory of evolution is assumed to be true and provides the framework within which secular scientists interpret the facts. It therefore occupies exactly the same status as the view of creation, based on the Bible, which was so successful in giving rise to modern science and which increasing numbers of scientists are returning to.

Consequences

Both frameworks enable scientific endeavour to be carried out. However, they lead to views of life that are diametrically opposed to each other. Chance is fundamental to the theory of evolution. It is essentially an 'anti-design' theory. The writings of leading evolutionists, such as Richard Dawkins in the UK and the late Stephen Jay Gould in the United States, demonstrate this clearly. However, a world-view based on chance and randomness is bleak indeed. Essentially, the evolutionists are saying:

> **We came from nowhere.**
>
> **We are going nowhere.**
>
> **There is no purpose in anything that we see around us.**
>
> **'Life' is meaningless.**
>
> **Humans are not special in any sense.**

On the other hand, the creationist view of life is based on a belief in order, purpose and design. Creationists are saying:

> **There is a Creator.**
>
> **We have a Maker.**
>
> **He designed and made the universe for a purpose, to reveal His loving nature to beings capable of appreciating it.**
>
> **Humans are very special. They are made in the image of God.**
>
> **This earth has been designed to be their home.**
>
> **All of God's creation has value, but people have been created for a special purpose – to enjoy an intimate relationship with their Maker.**

This antithesis between chance and design is the fundamental difference between the two systems and the most important point to impress on the students. They need to understand that what is at issue is a conflict between two opposing world views.

How to teach the debate

Young children are natural creationists. They do not have to be convinced that living things are designed – it is self-evident to them. For those teaching young children in a Christian school, all that is needed is to educate them within the framework of creation, order, purpose and design. At every opportunity, stress the beauty and orderliness of nature and the value and importance of created things, especially people.

It is hard for pupils to understand the philosophical issues until they are in their mid-teens. At this point the debate can be opened up with them. It is important to conduct the debate in such a way that the students can feel free to question the framework that they have been given up to this point. We must respect their right to come to a different position, however misguided we may feel it to be. The following are important guiding principles for the debate:

- Terms need to be defined carefully. For example, natural selection is not the same thing as evolution, even though Darwin confused the concepts. Creationists do not necessarily dispute that some form of natural selection has taken place or that 'species' can change within defined limits. What is disputed is that one major type of animal could ever change into another, or that any major change can occur by chance.
- Evolutionists should be treated with respect.
- The creationist cause has been done much harm by the quoting of suspect data and the

use of unverified theories. It is best to admit that mistakes have been made and more are likely to be made as we search for better theories to explain historical evidence such as the fossils.

- The 'Intelligent Design' movement is proving to be very successful in challenging evolution and its principles should be stressed.
- This is a spiritual battle, involving spiritual forces of deception. Spiritual problems require spiritual solutions, especially the weapon of prayer.
- Evolution can best be seen for what it is when set against the backdrop of order, purpose, design, reasons for living, a Creator who loves and has redeemed His people.

This article was originally prepared as a lecture handout for the author's visit to the Ukraine in March 2005.

> 'Young children are natural creationists. They do not have to be convinced that living things are designed – it is self-evident to them.'

The Foundations of our Faith. 6:

The Doctrine of the Fall

J. H. John Peet

Some years ago I was being interviewed on a radio programme about my creation ministry. The interviewer was very positive about my comments but then added, "But, John, that is not the world as we see it today, is it? What's gone wrong?" It is the difference between Genesis 2 and Genesis 4 – namely Genesis 3 which describes man's rebellion against his Maker, known theologically as the Fall.

All the problems of the universe have their origin here. Without an understanding of the Fall, we have a wrong worldview.

The Fall is a **statement against God's goodness** as described in Genesis 1 and 2. For God, the "very good" of Genesis 1 turns into "grieved":

work has become **labour**

love has turned to **lust**

protection has given place to **blame**

dominion has become **tyranny**

health has been marred by **sickness**

life leads to **death**

spirituality has become **idolatry**

righteousness has become **hypocrisy**

As a result of the Fall, **relationships have been shattered:**

man and God:	man hiding from God
man and woman:	man accusing his wife
man with man:	man murdering his brother
man with nature:	thorns and thistles to remind us of our sin
man with himself:	the basic psychosis

We are told that before the Fall, God met with Adam in the Garden and they walked and talked together. What a remarkable time that must have been! Adam could have asked so many questions and received answers directly from the Creator. He could have expressed his love for his Maker freely. But then he disobeyed. Now, when he heard God moving through the Garden, he hid himself behind a tree – can you believe it! Could a tree hide a man from his God? Indeed, the New Testament describes the relationship as one of death.

In Genesis 2, we see Adam putting a loving arm around Eve, protecting and loving her. In Genesis 3, he is pointing the finger at her and saying, "It's her fault". The Bible has the only explanation of the origin of these relationship troubles. In Genesis 2, the beauty of the Garden relationship was summed up in their nakedness and lack of embarrassment. In Genesis 3, their first action was to cover themselves up, a sign of a loss of trust between themselves.

The natural relationships between man and man have transformed into jealousy and murder. Heterosexual relationships have become marred by homosexual ones.

For man with himself, we see that the image of God has been shattered. It is like looking into a shattered mirror; we can see something of the likeness, but it is distorted.

Then we see that **the Fall brings God's judgment**. Evolutionists deny the origin of evil at the Fall and so leave no room for God's judgment of sin. Is sin evolution or revolution? Is it a part of our ancestry or the result of our rebellion? The Fall says that man's rebellion was wilful and he is responsible; man is accountable. Guilt and decay enter the world.

Christian evolutionists fail to see the great catastrophe of the Genesis 3 judgment: both the spiritual *and* physical effects. Why is the creation groaning (Romans 8:19-21) if it was not cursed? What is the "curse" if this event is not for real?

The effects of the Fall include:

embarrassment due to nakedness (2:25; 3:7)

curse on the serpent (3:14)

enmity between the woman and the serpent (3:15)

pain in childbirth (3:16a)

conflict in marriage (3:16b)

curse on the ground (3:17b)

curse on man's work (3:17b-19a)

return to dust (3:19)

For man, his whole way of life is transformed: work has become labour with sweat, backache and prickly thorns. He has lost his position of authority over the natural order and even his wife will rebel against his leadership. Sin is an embarrassment and leads to blushing – until we become hardened and insensitive to our God-given consciences.

The judgment on the snake has been demonstrated in recent research which has shown that certain species of snakes do have vestigial legs and it would seem reasonable to relate this to the biblical judgment. But the ultimate judgment is declared too in the announcement of the coming Saviour.

The harmonious relationship between a man and his wife is destroyed. The conflict in marriage is indicated through the destruction of the God-ordained order. Wayne Grudem has pointed out that the judgment in Genesis 3:16 (as in 4:7) should be rendered as, "Your desire will be to rule against your husband", but he will respond with greater force and rule over her. The restored creation order reverses this (Colossians 3:18-19).

The ground underwent a change because of man's sin. Until this point, as he tended the Garden he would have been reminded of his Creator: "How wonderful He is!" Now, he would prick his fingers and work with sweat on his brow and think, "How awful my sin must be!" This, in God's mercy, should bring us to repentance.

The curse refers to physical death. We will return to dust (physical) because of our sin. If death preceded the Fall as required by the evolutionist, what did sin do to this world?

Evolutionists also miss the significant judgment in Romans 1. In the UK, we have replaced the Creator (Creation) with the creature (Evolution) (1:23). He has given us over to sexual impurity (1:24), He has given us over to homosexuality (1:26) and He has given us over to depraved minds (1:28). We are without excuse (1:20): nature is not to point us back to a single cell, but to God. "They profess themselves to be wise", but God says they are fools (1:21).

In the next part of this series, we will note also that God made a promise even when man fell into sin: salvation was His plan. ■

Hiding from God: relationships were shattered by the Fall.

> 'Then we see that the Fall brings God's judgment. Evolutionists deny the origin of evil at the Fall and so leave no room for God's judgment of sin.'

The 'stone runs' of the Falkland Islands

Charles Whitworth

The Falkland Islands

The Falkland Islands lie between 51° and 53° South some 370 miles due east of the coast of South America (Patagonia). There are two main islands (East and West Falkland) and an extensive archipelago. The islands have a combined surface area of 12,000 km^2, a little smaller than Wales. They are a British overseas territory with full internal self-government.[1]

The spectacular bird-life (especially the albatross and the penguins) and the extensive breeding colonies of southern sea-lions and sea elephants are a main attraction of the islands. Several of the larger offshore islands are protected nature reserves. These animal populations are supported by the abundance of krill and squid found offshore in the rich waters of the South Atlantic.

But the geology and landscape of the two main islands (East and West Falkland) are of interest too. In appearance the landscape of the islands is similar to that of the North-West Scottish Highlands, though with lower average annual rainfall and a cooler oceanic climate. **Figure 1** shows a view on East Falkland inland towards the Wickham Heights from the Malo River. Generally the vegetation has been extensively shaped by the grazing of sheep both on the two main islands and the larger offshore islands.

The geology of the islands[2]

Historically the rocks of the Falkland Islands are more closely related to the rocks of Southern Africa than to those of the nearby South American mainland. This reflects the fact that they were once part of the supercontinent of Gondwanaland, which comprised South America, Africa, Australasia and Antarctica.

They are predominantly composed of quartzite, sandstone and shales with the exception of the southern half of East Falkland where the rocks are mainly basalt and mudstones. The summary map at **Figure 2** shows the broad division of geological formations across the two main islands.

Where the 'stone runs' are found

It is near the quartzite ridges in East and West Falkland that the so-called 'stone runs' are found. They are a notable and very unusual feature of the geology of the islands and were noticed by early settlers and visitors. Their unusual features were recorded as early as the 1830s by Charles Darwin during his visit to the South Atlantic with the *HMS Beagle* expedition in 1833-34. In his *Journal*, published first in 1839, Darwin wrote:

> "In many parts of the islands the bottoms of the valleys are covered in an extraordinary manner by myriads of great loose angular fragments of the quartz rock, forming 'streams of stones'… They are not thrown together into irregular piles but are spread out into level sheets or great streams." (Darwin, 1839)

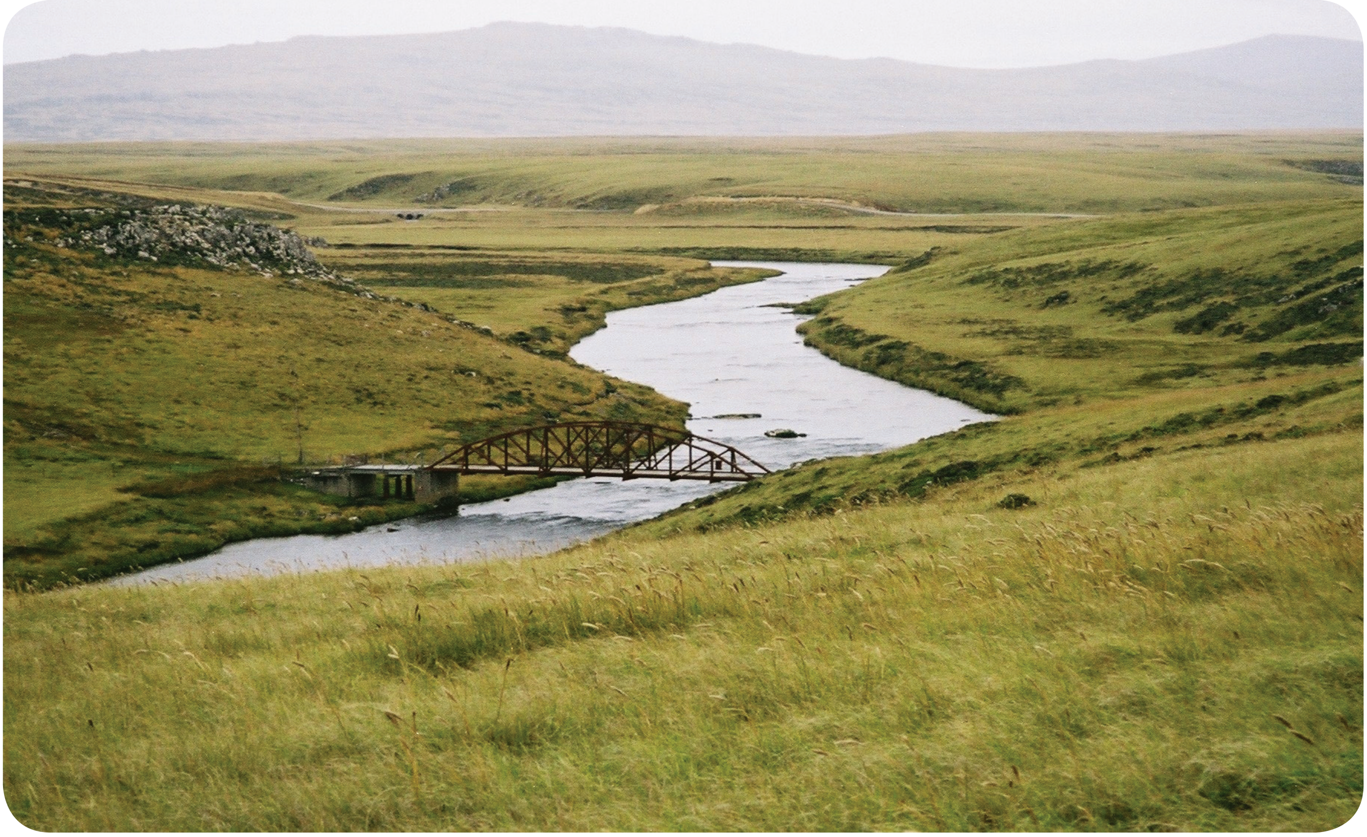

Figure 1. The Malo River looking south to the Wickham Heights, East Falkland. © Charles Whitworth.

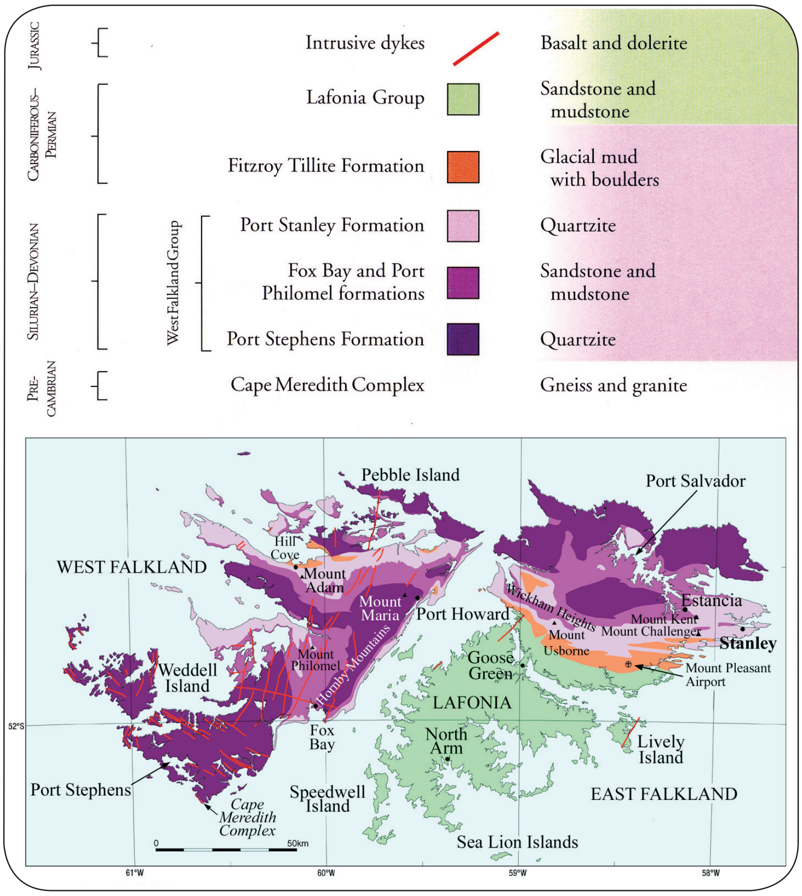

Figure 2. A detailed solid geology map of the Falkland Islands. Reproduced by permission of the British Geological Survey & Falkland Island Government. IPR/66-01C.

Features of the stone runs

The stone runs are particularly extensive in East Falkland on the slopes of Mount Challenger and Mount Kent in the areas where the quartzite rocks are abundant. In many areas they are associated with marked terrace features. **Figure 3** shows stone runs on the southerly slopes of Mount Challenger.

In some areas the stone runs show up as vertical stripes alternating with vegetation and are several hundred metres in width – as on the slopes of Mount Challenger in East Falkland. In other areas as in the area of Estancia, in **Figure 4**, they are just single runs of boulders. This photo, taken on East Falkland looking towards Port Salvador, shows just a single run of a few metres width. Individual boulders within a run vary in width from less than a metre to over two metres. Typically the surface boulders have been sorted so that they lie parallel to the slope. Interestingly, in the runs themselves, the largest blocks lie on the surface with the size of the blocks decreasing as you go lower in the cross-section.

The alternating pattern of the stone runs with the darker vegetation is the more striking because of

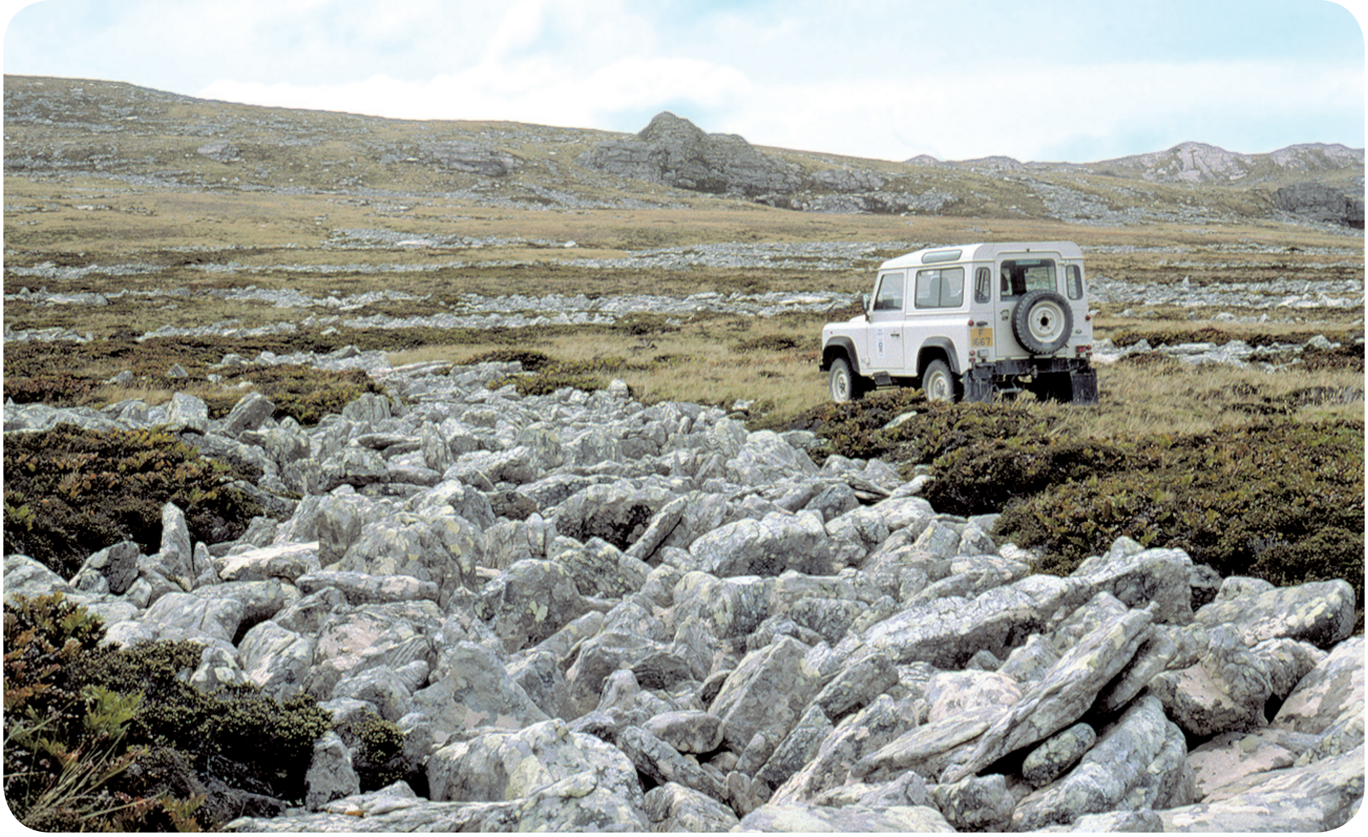

Figure 3. Stone runs on the southern slopes of Mount Challenger, East Falkland. Reproduced by permission of the British Geological Survey & Falkland Island Government. IPR/66-01C.

the pale grey colour of the blocks themselves. This is largely due to effects of weather as the surface boulders of the runs have been leached by rainwater over time. In addition this 'whitening' of the rocks is accentuated by the grey-white lichen that has colonised the surface of the boulders. Lower down within the actual runs the blocks themselves are orange in colour, stained by iron oxides in the rock. This can best be seen where drainage ditches have been cut across the slopes of the stone runs, as on the slopes of Mount Kent (**Figure 5**).

How the stone runs were formed

Although the symmetry and patterns of the stone runs at first puzzled observers, Darwin included, it is now generally agreed that they are the results of the climatic conditions of the last Ice Age and are perhaps only thousands of years old. "Innumerable cycles of freezing and thawing" first broke up the hard quartzite rock and then heaved and sorted the resulting debris (Stone and Aldiss, 2001, p.3). The resulting surface debris layer of rocks and soil (as it thawed and froze again year by year) slowly crept downhill – a process called solifluction. It requires now only a little imagination to recognise the tremendous natural forces that went into the formation of these strange 'rockscapes'. Similar stone runs can be found elsewhere in the world where ice sheets once covered continental areas. But it is the size of the block fields and the extent of the stone runs themselves in the Falkland Islands that are exceptional.

The stone runs and Earth history

How do the stone runs of the Falkland Islands fit into the Bible's view of Earth history and the major biblical divisions of geological time (as opposed to the secular evolutionary perspectives of the geological column)? We have already seen that the stone runs provide striking evidence of some of the changes to the surface of the Earth brought about by the Ice Age. In turn the Ice Age was probably the culmination of a period of heating and cooling of the Earth's surface that followed the events of the Genesis Flood (Genesis 6-8) and its dramatic aftermath.[3] This was a period when the probable pre-Flood climate of warmer and more humid conditions was replaced by a much more unstable climate leading to a single, rapid episode of ice advance, the remnants of which can be seen in the current polar ice caps. As the Ice Age came to an end it left in these offshore islands dramatic evidences in the landscape of earlier climate change – the stone runs of East and West Falkland. ■

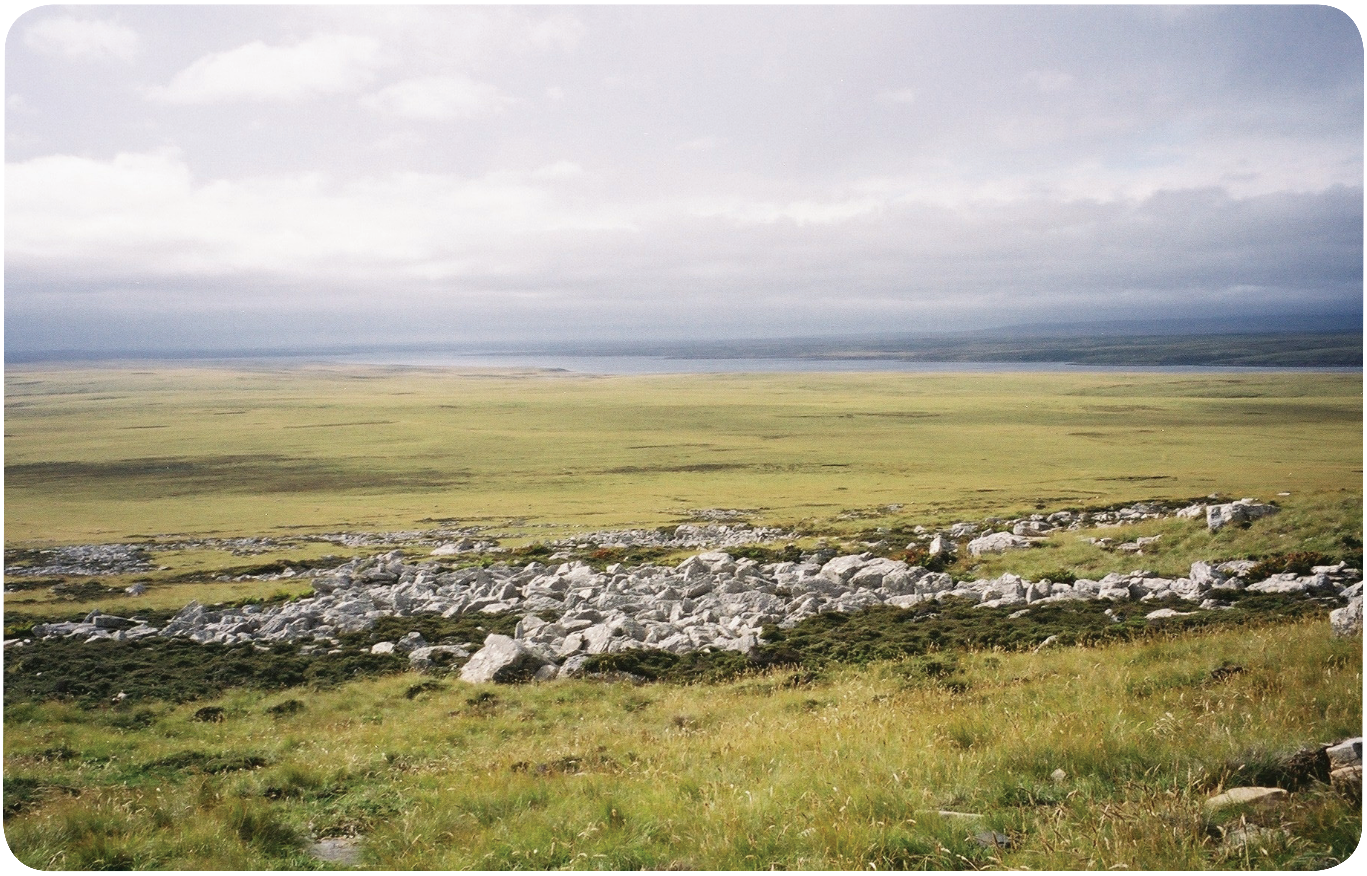

Figure 4. Stone runs near Estancia looking northwest to Port Salvador, East Falkland. © Charles Whitworth.

> 'The Ice Age was probably the culmination of a period of heating and cooling of the Earth's surface that followed the events of the Genesis Flood (Genesis 6–8) and its dramatic aftermath.'

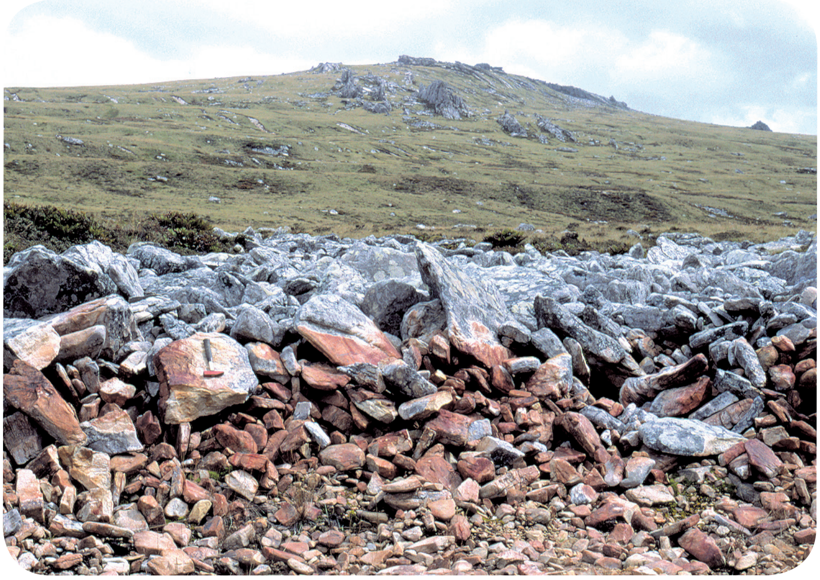

Figure 5. Boulders at Mount Kent showing iron oxide staining. Reproduced by permission of the British Geological Survey & Falkland Island Government. IPR/66-01C.

Notes

[1] My wife, Angie, and I were able to visit the islands in January 2005 as guests of friends working for the UK Government. We arrived on the weekly LanChile flight via the South American mainland.

[2] For additional information on the geology of the Falkland Islands, and on the stone runs, the recent booklet by Stone and Aldiss (2001) is very helpful. See also www.bgs.ac.uk.

[3] For an introductory discussion of this division of Earth history see Baker (2002, pp.31-35).

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Box jellyfish: not dainty delights

Margaret Helder

Among living creatures, it does not take a specialist to realize that jellyfish are not dainty delights of the deep. Although they may be beautiful in appearance, jellyfish are successful predators. Basically these creatures are composed of two layers of skin cells with a jelly-like layer separating the inner and outer tissues. In the context of multi-tasking, some skin cells of the jellyfish double as muscle cells. Cooperative action with other similar cells enables the organism to move. In addition, some cells are shed from the outer skin layer into the inner layer of jelly-like material. These cells then organize themselves loosely into a net of nerve cells. There is no brain.

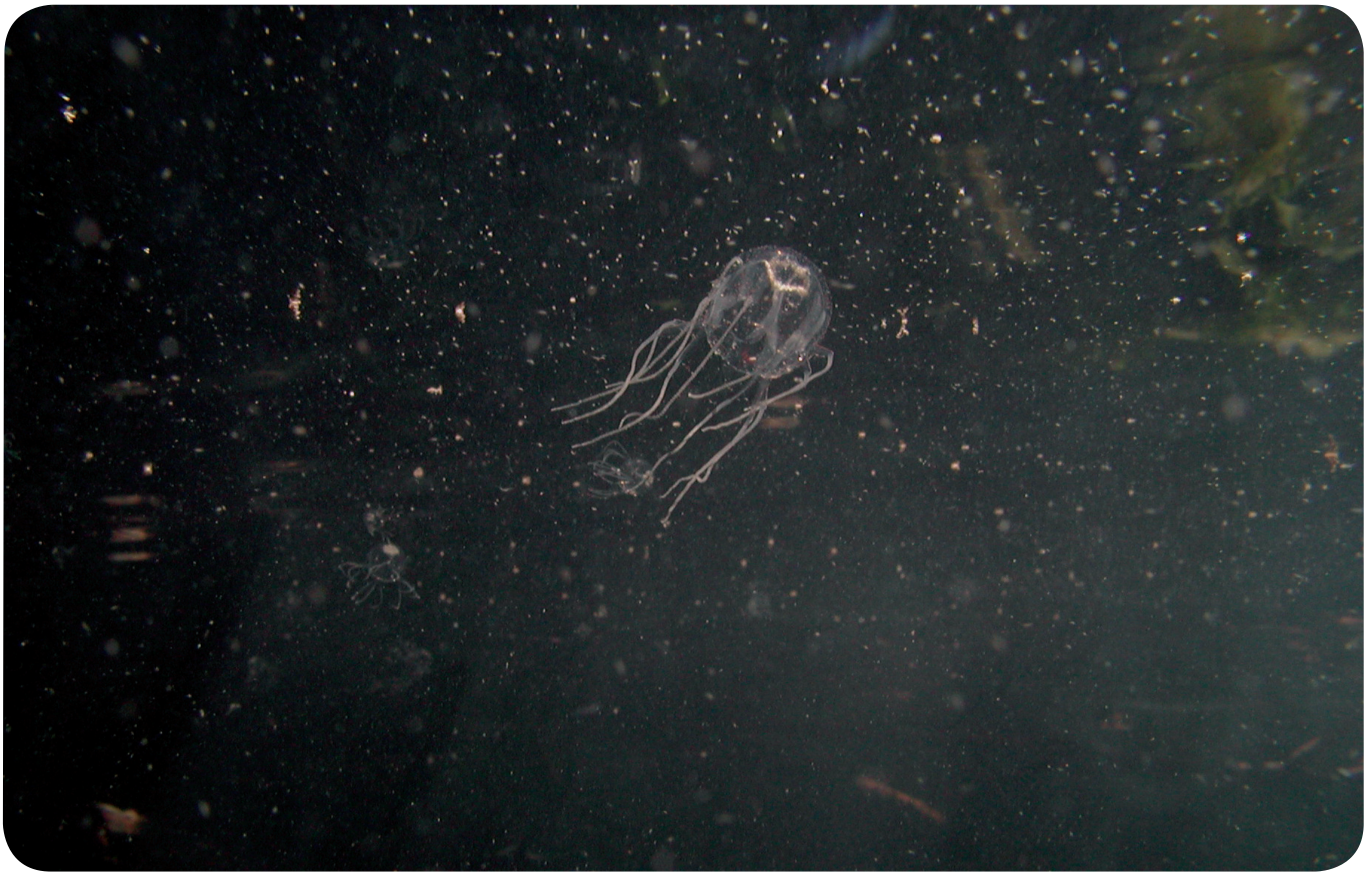
Despite this apparently simple structure, these organisms are not simple blobs. Jellyfish consist mainly of a bell- or umbrella-shaped body with tentacles hanging down from the bell. On the underside there is an opening into an interior digestive cavity. The mouth serves both to take in food and to eject the waste. Most jellyfish catch their food by chance encounters with suitable specimens. It is a case of wrong place and wrong time for the victims.

All jellyfish are armed with unique stinging cells called nematocysts. Each such cell is armed with a potent poison, always a protein and usually a paralyzing nerve toxin. So strong and fast is the stinger release that it is able to penetrate such surfaces as crustacean exoskeletons, fish scales and human skin. Normally many nematocysts release at the same time.

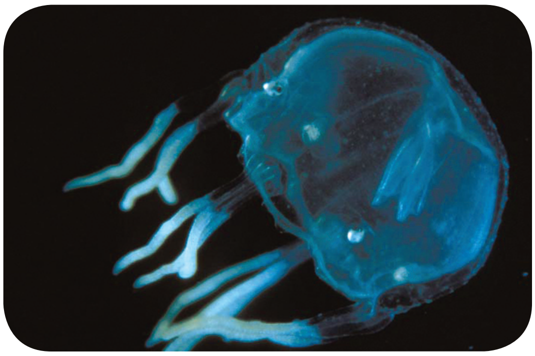
Jellyfish have long received a bad press as far as humans are concerned, initially because of the Portuguese man-of-war. This fearsome creature has a float visible above water level. The tentacles, however, can extend up to 9 m from a comparatively tiny 12 cm-long central body. After catching even a relatively large fish, the tentacles quickly contract to one hundredth of their original length. This extreme contraction of muscle tissue is most remarkable. Other organisms cannot even begin to match it. Obviously the mechanism by which this happens is not as yet understood.

In Australia, since the late 1800s, records have been kept of human deaths from jellyfish. Until 1943, all were attributed to the Portuguese man-of-war. It was then that biologists began to pay attention to cubozoans or box jellyfish. The first confirmed death from a cubozoan was in 1955 near Cairns on the Queensland coast. During the next 45 years, 59 more deaths were attributed to these jellyfish. Often victims die within five minutes. Such notoriety has certainly focused attention on these organisms.

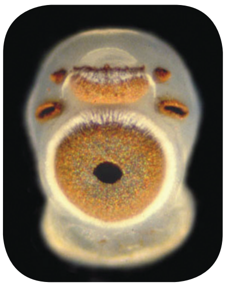
Cubozoans or box jellyfish derive their name from their unusual shape. Unlike most jellyfish which have a round bell shape, cubozoans are square when viewed from above. There are about twenty species



A box jellyfish propelling itself through the murky deep. © Prof. Dan-E. Nilsson, Dept of Cell and Organism Biology, Lund University, Sweden. Used with permission.



The box jellyfish *Tripedalia.* © Prof. Dan-E. Nilsson, Dept of Cell and Organism Biology, Lund University, Sweden. Used with permission.



The eyes of the box jellyfish *Chiropsalmus.*
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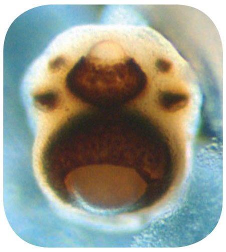

The eyes of the box jellyfish *Tripedalia cystophora.*
This image shows the upper and lower lens eyes flanked by two pairs of simpler eyes.
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to be found in tropical seas around the world, but the sea wasp *Chironex fleckeri* of northern Australian waters is among the deadliest creatures known. A large adult may reach 35 cm in diameter with as many as 15 tentacles, each 3 m long, extending from each corner of the bell. The shape is not the only noticeable thing about cubozoans. Unlike most jellyfish, which merely happen upon their victims, cubozoans actively pursue their prey. Naturally the experts have wondered how these creatures are able to exhibit such complex behaviour.

Box jellyfish are somewhat more complicated than other jellyfish but the pursuit of their victims is their really exciting feature. By contracting muscles in the bell, as well as by contracting the rim of the bell to force water out faster, *Chironex* has been observed to cruise as fast as 2 m per second! More typically they move at 1 m every five to ten seconds. These creatures avoid crashing into objects like mangrove roots in their favourite habitat. They can avoid capture and they pursue their victims much the way predatory fish do. It is apparent to everyone that these jellyfish must be able to see. Recent studies

> ‘A large adult may reach 35 cm in diameter with as many as 15 tentacles, each 3 m long, extending from each corner of the bell.’

have shown that this is indeed the case, but these new insights have led to even more puzzling questions.

Even ordinary jellyfish have special sense organs near the margins of the bell. Each organ contains two sensory pits to perceive chemical stimuli (like our sense of smell), one spot sensitive to light, two structures sensitive to touch, and one body which indicates orientation (upside down, sideways, etc). Biologists have long known that ordinary jellyfish only swim when they have at least one of these organs functioning. If all are destroyed, the jellyfish stops swimming and dies. Similarly, box jellyfish have sensory organs, but theirs are much fancier.

Box jellyfish have four sensory organs in the form of small clubs attached by a stalk to the bell proper. Inside the club there are four pigment-filled pits to perceive light. In addition there are two much larger eyes. The interesting thing about the two larger eyes, one of which faces upward and the other outward, is that these are camera-style eyes. The questions that arise from this fact are: why do these jellyfish have eyes like animals with backbones (vertebrates), what do these jellyfish see, and how are they able to respond without a brain?

The camera-style eyes of box jellyfish have all the appropriate components: cornea, lens, retina, a pigment layer and an iris. All parts function too. In the lower eye, even the pupil contracts in response to bright light. This choice of eye design is indeed unexpected. The surprise is that supposedly extremely simple organisms possess such fancy eyes. Most animals without backbones (invertebrates) have compound eyes (as in insects, for example). However there are a few invertebrates such as squid and octopus, famous for their intelligence, which enjoy camera-style eyes. One expert, Simon Conway Morris, declares that "camera-eyes are not only different from compound eyes; they are better" (Conway Morris, 2005, p. 162). So we have a supposedly primitive organism with the best type of eye. The wonder of it is that cubozoans have no obvious brain to interpret messages from their eyes.

The question still arises as to precisely what the box jellyfish eyes perceive. The scientific journal *Nature* recently published a report on such a study (Nilsson *et al*, 2005). A team of scientists studied the optics of the lens from the cubozoan eye. They already knew that this protein is unique, unlike that from any other eye. Thus the jellyfish eye had a separate origin from other organisms with eyes of similar design. On this issue the scientists muse: "Making good lenses seems to be a demanding task, because only a few animal phyla have accomplished it" (Nilsson *et al*, 2005, p.202). How is it, then, that the jellyfish managed it? That issue, however, was just the beginning of the paradoxes. What the team discovered is that the jellyfish lenses are so well-constructed that the focus is very sharp (p.202). A commentator in the same issue of *Nature* points out that the lens design involves highly sophisticated optics, conforming exactly to optical theory. It is amazing how clever those jellyfish must be.

There is however another remarkable feature of the cubozoan eye. The retina, which receives the image from the lens, is much too close to receive a sharp focus. These jellyfish are like humans who need glasses. The commentator points out that this situation leads to "a loss of fine visual detail that the lens is able to provide" (Wehner, 2005, p.159). Now the questions become really pressing. The commentator asks, "But what are the jellyfish's eyes designed for?"

The scientists conclude that the jellyfish may navigate better with a blurry focus of large objects rather than precise images of irrelevant small objects in the environment. From an evolutionary point of view, it seems incredible that so fancy a lens would arise when something less precise would be adequate. How would natural selection select for a sharp focus when that wasn't being used or needed? Surely in this case it is obvious that we are dealing with intelligent choice rather than evolutionary processes. This is evidently an instance where the Designer selected features on the basis of artistic interest rather than mere utility. Since these creatures lack a brain, scientists wonder how they see. All we know is that cubozoans live as they were designed to live, with talents and design features beyond our understanding. Indeed we should feel humble at the creative finesse, which we can never hope to duplicate, that we observe in nature. ■

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Similarities and relationships

Paul Garner

The first job that Adam was given was to name the animals and birds that God had made:

> "And out of the ground the LORD God formed every beast of the field, and every fowl of the air; and brought them unto Adam to see what he would call them: and whatsoever Adam called every living creature, that was the name thereof." (Genesis 2:19)

He appears to have performed the task intuitively – God did not have to teach him how to do it (Wood and Murray, 2003, pp.5-10). This suggests that the ability to name and classify things is an integral part of being human. But have you ever wondered *why* God delegated the naming of the animals and birds to Adam? After all, God himself gave names to the stars (Psalm 147:4; Isaiah 40:26).

There appear to be two main reasons. Firstly, the naming of the animals was designed to arouse in Adam an awareness of his loneliness (Genesis 1:18-20) and the naming of the animals was followed immediately by the creation of Eve from Adam's side (Genesis 1:21-22). Secondly, Adam was made to be a steward of God's creation (Genesis 1:28) and the naming of the animals was a way of Adam expressing his rule over them. However, there may be a third, less obvious, reason. The creation is an expression of God's own nature and, by studying the works of God, we get to know him better (Romans 1:20). Perhaps God gave this task to Adam because he wished to reveal himself – as Creator – to the man (Wood and Murray, 2003, p.8). Likewise, we can study the Earth's living creatures knowing that by doing so we are able to learn more about the God who made them.

Groups within groups

Like Adam, we continue to name and classify living organisms. Scientists who specialize in this field – called taxonomy – usually place species in groups according to their similarities. They observe, for example, that a lion is more similar to a tiger than to a domestic cat. So they place the lion and tiger in the same genus *(Panthera)* but the domestic cat in a different genus *(Felis)*. However, lions, tigers and domestic cats have more in common with one another than any one of them has with, say, dogs. Thus, the cats are grouped in one family *(Felidae)* and the dogs in another *(Canidae)*. And so it goes on – the families are grouped in orders, the orders in classes, the classes in phyla, the phyla in kingdoms. As a result, the conventional classification scheme arranges living organisms in a series of groups-within-groups – a pattern of similarities that is called a *nested hierarchy*.

Most biologists think that this pattern is a consequence of the evolutionary history of living organisms. According to evolutionary theory, new species are produced by a series of branching events. An ancestral species splits into two descendant species – each of which forms a new branch on the evolutionary tree. Each of these branches may then divide to give rise to other branches. Any new characteristic that arises in a particular branch is passed on to all the descendants of that branch. The evolutionary biologist Douglas Futuyma illustrates it like this:

> "Thus, for example, the four-legged condition evolved in amphibians, and is retained by most of their descendants. Among these, the ancestors of the mammals evolved a single-boned lower jaw. Among some of their descendants, the rodents developed gnawing incisors, and so on. There is a nesting of groups within groups, as a consequence of common ancestry." (Futuyma, 1995, p.53)

X-ray image of a cat's paw. This illustrates the five-digit pattern, widely distributed among the vertebrates, that we call the pentadactyl limb. © Craig Smith.

The idea that life is arranged in a nested hierarchy has been so pervasive that, until recently, it was assumed to be true even by creationists. As a result, there have been attempts to explain this pattern in terms of creation rather than evolution (Wise, 1994). For instance, it is possible to classify man-made objects in a nested pattern – and we know that they did *not* evolve from a common ancestor! Here is how palaeontologist Kurt Wise put it:

> "Humans have designed a large number of different types of teaspoons. Some are made of stainless steel, others of silver. Some have monograms on them, others do not. Some have artistic designs engraved on their handles, others do not. Yet they are all classifiable as teaspoons. And though there are many types of tablespoons, many types of soup spoons and many types of serving spoons, all these types of spoons can be classified together as spoons. The wide variety of spoons can be classified with the wide variety of forks and the wide variety of knives as silverware; and the silverware can be classified with plates, bowls and cups as tableware. Tableware can be classified with furniture and appliances as housewares, and so on. Humans, without so intending, create objects that are distributed in character space in a nested hierarchy of form." (Wise, 1994, p.220)

In other words, even *designed* objects may be classified in a nested pattern. However, evolutionary theory does not simply predict that it ought to be possible to classify living organisms in a series of nested groups. It says that there is only *one* nested pattern that is the 'right' one – the one that reflects the evolutionary relationships of the organisms. While it is possible to classify cutlery in a nested hierarchy according to function, it can be classified equally persuasively according to materials, size, weight, colour or country of manufacture (Shapiro, 1994). According to evolutionary biologists, this is said to be *unlike* living things for which there is a *unique* nested pattern. This is regarded by many as strong evidence in support of evolutionary theory.

Questioning the single nested pattern

However, is this assumption correct? Is there only one nested hierarchy that properly describes the relationships between living organisms? Recently, creation biologists have begun to question this idea. Scientists use computer programs to construct 'evolutionary trees' of relationship, but it is common for these programs to produce thousands of alternative 'trees' for the same group of organisms. Various assumptions must be made to decide which of these 'trees' is the 'right one'. This shows that the same group of organisms can, in fact, be arranged in more than one nested pattern – *multiple* nested hierarchies are possible (Wise, 1998).

Furthermore, whichever 'tree' we choose as the 'right one', we find that there are similarities between organisms that contradict the tree. In evolutionary thinking, these tree-contradicting similarities cannot have been inherited from a common ancestor and so must have arisen independently in different lineages. Here are two examples that illustrate the point:

- **Bats.** Biologists recognise two groups of bats: the microbats and the megabats. Both groups have the same wing structure and this similarity unites them. However, the megabats have a pattern of nerve connections in the brain that they do *not* share with the microbats. Instead, they share this complex arrangement of nerves with the primates – lemurs, monkeys, apes, etc (Pettigrew, 1986). Most biologists think that all bats evolved from a common ancestor – but, if so, the megabats must have evolved a 'primate-like' brain independently of the primates. A small number of biologists have argued that the megabats have a 'primate-like' brain because they are, in fact, a flying primate – but, in that case, the megabats must have evolved their wings independently of the microbats.
- **Whales.** There has been an ongoing debate among evolutionary biologists about which group of mammals is most closely related to the whales. Until recently, this honour went to a group of extinct mammals called mesonychids which shared many features with the whales, including the form of the teeth (Naylor and Adams, 2001). However, most evolutionary biologists now think that a group of mammals called artiodactyls are the closest relatives of the whales, because 'early' whales and artiodactyls both possess a 'double pulleyed' heel bone and the mesonychids do not have this feature (Thewissen *et al*, 2001). If the whales were descended from the artiodactyls, however, that must mean that the mesonychids evolved 'whale-like' teeth independently of the whales. Alternatively, if the whales are descended from the mesonychids, that would mean the 'early' whales evolved an 'artiodactyl-like' heel independently of the artiodactyls.

In both examples, whichever 'tree' an evolutionary biologist chooses to adopt, there are similarities that contradict it. The abundance of these tree-contradicting similarities weakens the argument that there is a *unique* nested hierarchy that describes the pattern of life. This suggests that non-evolutionary explanations for shared similarities are worth exploring.

A non-evolutionary network

While evolutionary theory leads biologists to consider only tree-like patterns of similarity, creation biologists are free to consider other possibilities. There may be other patterns of life that are equally valid or better. Kurt Wise has suggested that life is a complex network rather than a single nested hierarchy.

The famous fossil *Archaeopteryx* is a mosaic form combining bird-like and reptile-like characteristics – but that doesn't mean it's an evolutionary intermediate. The mosaic distribution of characters can be explained at least as well by creation as by evolution. © Bob Ainsworth.

If this is the case, each created kind is a unique combination of traits (characteristics) that might be shared individually with members of other groups. In other words, individual traits may be distributed among living organisms in a similar way in which coloured tiles are distributed in a mosaic.

There are many examples of creatures that illustrate this mosaic pattern. The duck-billed platypus, for instance, has features of both mammals (hair, milk production) and reptiles (egg-laying). Perhaps the best-known fossil example is the bird *Archaeopteryx*, which combines feathers with teeth and wing claws. Another example is *Psarolepis*, a fossil fish discovered in China, which combines characters found in at least four different groups (Zhu *et al*, 1999). Kurt Wise (1995) has given these mosaic creatures a name; he calls them *chimeromorphs*. Evolutionists often interpret these mosaic creatures as evolutionary intermediates linking major groups. However, Wise (1994, p.227) makes an important point against this interpretation:

> "Although the entire organism is intermediate in structure, it's the *combination* of structures that is intermediate, not the nature of the structures themselves. Each of these organisms appears to be a fully functional organism full of fully functional structures."

Evolutionary theory might lead us to expect examples of intermediate *structures*, but in these mosaic organisms the structures are fully developed and highly complex. What is unusual is their combination in a single creature. The existence of these curious mosaics, which share similarities with two or more other groups, supports the view that life is *not* singularly nested.

More evidence that the pattern of life might be better described as a complex network comes from the discovery of similar genes in 'distantly related' organisms. For a decade or more it has been known that bacteria and archaea (both single-celled organisms) contain genes that appear to have come from 'multiple sources'. This led to speculation that organisms on different branches of the evolutionary tree had swapped genes between themselves – a process called lateral gene transfer – early in the history of life. Creation biologists can consider an alternative possibility: that these organisms were created with this combination of genes in the first place. However we seek to explain the distribution of these genes, we can agree with the investigator who wrote that "the history of life cannot properly be represented as a tree" (Doolittle, 1999, p.2124). More recently, it has been suggested that the relationships between the three fundamental domains of life – the eukaryotes (plants, animals, fungi, etc), the eubacteria (the 'true bacteria') and the archaea (the 'old bacteria') – is best described by a 'ring' rather than a 'tree' (Rivera and Lake, 2004). Commenting on this study, two biologists called this "a radical departure from conventional thinking" (Martin and Embley, 2004). The underlying message seems to be that the familiar evolutionary 'tree' simply does not apply to these organisms. It fails as a description of the emerging pattern of life.

A creation basis for shared similarities

Creation biologists point to at least three non-evolutionary reasons why there are shared similarities among living things:

- **They point us to a common Creator.** One of the purposes of creation is to direct men to the one true God who made all things, and shared similarities help to achieve this. Imagine if different groups of organisms had little in common – we might arrive at the incorrect conclusion that there had been many different creators. As it is, despite the great diversity of living organisms, there is an underlying unity (ReMine, 1993, pp.22-23). For instance, virtually all organisms operate using the same genetic language and machinery.[1] This fundamental similarity suggests a common origin and, thus, a common Creator.
- **They are necessary for a functioning creation.** Virtually all living things share profound similarities in metabolism – the chemical reactions which provide energy for the vital processes of life. For instance, similar proteins do similar jobs in humans and yeast. There are remarkable consistencies in the structure of blood serum proteins, haemoglobin and the cytochrome system (proteins used in respiration). Such similarities are essential for the creation to operate; otherwise it would not be possible for organisms to share an environment and interact with each other as they were designed to do.
- **They result from an economy of design.** Human beings often use the same design element in many different objects – for instance, similar motors are used in washing machines, tumble dryers, dish washers and vacuum cleaners. We see something similar in living organisms. The arrangement of bones in the vertebrate limb provides a striking example. Our own forearm illustrates the general pattern: we have a single bone in the upper arm, two bones in the lower arm, a cluster of bones in the wrist and hand, and the five fingers. This same pattern is found in the amphibians, reptiles, birds and mammals. However, we see the basic pattern modified for different purposes: grasping, walking, running, digging, swimming or flying. One study looked at possible alternatives to this design and found that variations which moved away from it appeared not to work (Brown, 1983). This may explain why the Creator chose to use this arrangement in so many different organisms.

Conclusion

Living organisms share many similarities, and evolutionary biologists use these to construct a tree-like pattern of relationships. They interpret this as an evolutionary tree, showing how all living things can be traced back to a common ancestor. However, there are many similarities which contradict the idea that there is a single evolutionary tree. In fact, it is possible to construct many different trees, suggesting that evolution may not be the best explanation for the pattern of life. The creation account in the Bible provides an alternative basis for explaining the similarities we observe in the living world. We would expect similarities because they are necessary for the creation to function and they result from an economy of design. Furthermore, they point us to the fact that there is one Creator who made everything.

Note

[1] The 'universal' genetic code is not quite universal. There are fifteen variants from a variety of organisms including mycoplasma bacteria, some species of the yeast *Candida,* and some sea squirts. See Wood and Murray (2003, p.29).

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Meeting report – The chimpanzee genome reveals its secrets – or some of them!

J. H. John Peet

Friday 9th September 2005
A lecture organized and hosted by
The Genesis Agendum
St Paul's Church, Robert Adam Street,
London W1U 3HW

On 1st September 2005, the scientific journal *Nature* announced the publication of the draft sequence of the chimpanzee genome. Without knowing of this publication date, *The Genesis Agendum* had arranged many months previously for Dr Geoff Barnard to give a lecture entitled 'According to Genome' at their London meeting. Dr Barnard is a researcher into immunological diagnostic methods at the University of Cambridge. The lecture took place on 9th September 2005. The writers of the *Nature* articles accompanying this announcement presumed that evolution was a fact and interpreted their results in that light. Dr Barnard showed that many conclusions did not support that assumption.

In the first part of his talk, however, Dr Barnard reviewed the fossil evidence of the chimpanzee. It is noteworthy that the same edition of *Nature* contained an article claiming to be the first ever report of fossilised material from a chimpanzee (McBrearty and Jablonski, 2005). These fossils comprise several teeth and Dr Barnard asked us to consider why the majority of fossil ape material previously reported is generally assigned to human ancestry. As an example he considered the discovery of *Sahelanthropus tchadensis* (Chad Man) that was initially reported in *Nature* in 2002 (Brunet *et al*, 2002; Brunet *et al*, 2005). The material is biochronologically dated to the late Miocene epoch (about 7 million years ago). Accordingly, on the basis of accepted evolutionary theory, it becomes impossible for such material to be assigned to anything other than hominid ancestry. Nevertheless, Dr Barnard drew our attention to the controversy (Wolpoff *et al*, 2002). For example, there are some anthropologists who regard Chad Man as the fossil remains of a female gorilla.

Dr Barnard also considered the famous fossil find of 'Lucy', which is assigned to *Australopithecus afarensis* (Johanson and White, 1979). Some have suggested that the post-cranial skeleton of 'Lucy' is essentially from a human female of diminutive stature (Wolpoff, 1983). Nevertheless, dated at 3.75 million years by conventional dating methods, 'Lucy' cannot be seen for what she really is.[1] What seems obvious cannot be entertained because of the acceptance of evolutionary dogma. In the same way, chimpanzee-like fossils (which include skulls and other post-cranial material including finger and toe bones) are not assigned to the chimps but to hominid ancestry.

Perhaps the most significant fossil remains that are denied their rightful classification are the Laetoli footprints which are also dated at approximately 3.75 million years (Leakey and Hay, 1979). They are assigned to *Australopithecus afarensis* but are indistinguishable from human footprints (Capecchi, 1984). Something has to be wrong. Could it be evolutionary dogma and dating techniques including biostratigraphic chronology?

In the major part of his talk, Dr Barnard considered the genetic implications of the publication of the chimpanzee genome. The publicity surrounding the work has claimed that the DNA of mankind and the chimps is almost identical. But there are significant differences. For example, it has been claimed that chimpanzees have 10% more DNA than humans (Marks, 1988). Furthermore, the human chromosome 2 is divided in the chimps so that they have one more chromosome than humans and the human genome contains 53 more genes that are partially or totally absent in the chimpanzee (The Chimpanzee Sequencing and Analysis Consortium, 2005); where did they come from? The claims of >95% similarity mask the extent of the actual differences: 35 million single nucleotide differences are detected.

This paper noted that the genetic differences indicated that rapid evolution occurred in 98 categories (covering such processes as immunity, olfaction, reproduction, etc) and slow evolution occurred in 251. Rapid evolution by chance could only be predicted in 30 of the categories. Again, the assumption is that evolution has occurred from a common ancestor. Accordingly, even in the absence of any evidence or observation, the dogma has explanatory power. If gene sequences are 'conserved', there has been little evolutionary change and the rate of change is minimal. If the genetic sequences are very different, there has been rapid evolutionary change.

A wonderful example of the evolutionary conundrum is the study of the sequences adjacent to the telomeres (the ends of the chromosomes) indicating significant differences between the two genera. It has been known for many years that there is almost total dissimilarity in these regions (Kakuo *et al*, 1999; Royle *et al*, 1994). This is confirmed in the *Nature* publication where the authors write: "The most striking regional pattern is a consistent increase in divergence towards the ends of most chromosomes. The terminal 10 Mb of chromosomes averages 15% higher divergence than the rest of the genome, with a sharp increase towards the telomeres… The cause of this effect is unclear" (The Chimpanzee Sequencing and Analysis Consortium, 2005, p.72).

Another example is the Y chromosome (the male sex chromosome) which is much larger in the human than in the chimpanzee (Hughes *et al*, 2005). The authors write: "Here we find, by systematically comparing the DNA sequences of unique, Y-linked genes in chimpanzee and human, which diverged about six million years ago, evidence that in the human lineage, all such genes were conserved through purifying selection. In the chimpanzee lineage, by contrast, several genes have sustained inactivating mutations". In other words, humans have been able to hold on to a full complement of the genes in this chromosome but chimpanzees have lost out!

It is often stated that 99% of human protein-coding genes are identical in the chimpanzee. Nevertheless, Dr Barnard brought to our attention a recent publication that states otherwise (Glazko *et al*, 2005). Dr Barnard noted that these differences contribute to an immunological intolerance between the different species. The proteins for humans and for chimps tend to be species-specific, emphasising that there is a barrier between the two.

A fascinating part of Dr Barnard's presentation concerned *gene expression*. This is the process by which the genetic information is converted to a protein and can be summed up in two steps: transcription (DNA to messenger RNA) and translation (messenger RNA to protein). Nevertheless, this barely hints at the complexity of the process. The full protein-coding gene contains sections known as *introns* which are excised to give the correct sequence of codons for the production of the protein. In addition, upstream of the protein-coding regions are specific control elements that modulate the transcription of the gene. These control elements are associated with activation and repression sequences that are involved in switching off and switching on genes. Traditionally, all these sequences have been dismissed as a part of the 'junk DNA' carried over from hominid ancestors. Recent research has demonstrated that these regions of non-coding DNA are definitely not 'junk'. In the process of constructing the protein, these sequences have important management functions. If any one of these parts is missing or faulty, the process fails. Dr Barnard suggested that this is a clear example of 'irreducible complexity', a type of complexity that could not have developed step-wise. In particular, these protein expression control sequences are species-specific (Keightley *et al*, 2005). These authors write: "Evolutionary conservation is particularly apparent upstream of coding sequences and in first introns, regions that are enriched for regulatory elements. By comparing human and chimpanzee genomes, we show here that there is almost no evidence for conservation in these regions in hominids". This is evolutionary jargon and means that the human and chimpanzee regulatory elements are nearly completely different!

Finally, the lecturer described *recombination hotspots*. During reproduction, the cellular division that leads to the formation of sperm and egg is described as *meiosis*. In this, the chromosomes from the male and female are zipped together in appropriate matching pairs. It is a complex, but very precise and accurate, process. It requires the total and complete alignment of homologous chromosomes. After alignment, there is a process of recombination during which specific regions are swapped from one homologous chromosome to the other. Misalignment and loss of chromosomal integrity would inevitably wreck this vital process. Human and chimpanzee chromosomes display distinct differences when one considers the specific regions where this swapping of genetic elements takes place. These recombination sites are called 'hotspots'. This is an area of intense research and in the *Nature* issue under consideration, there is an article on this subject by Linardopoulou *et al* (2005).

In an earlier commentary on this phenomenon by Jorde (2005), the author revealed that there is virtually no overlap between human and chimp recombination hotspots in the respective chromosomes. As she expressed it, "Where we're hot, they're not". So it would be impossible to explain how changing species such as humans and chimps could reproduce across the constantly changing genetic boundary. So often we hear the jibe, "Where did Cain get his wife?" One might ask a similar question of the evolutionist: "Where did the evolving ancestral hominid find his mate?" In a dramatic conclusion to his talk, Dr Barnard suggested that rapid evolution is just not compatible with fertility. In fact, one might conclude that it is not the survival of the *fittest* but rather the survival of the *fertile*. ■

Note

1. Dr Barnard's view is that Lucy's postcranial skeleton indicates that she was truly human and that *Australopithecus afarensis* is a mixture of human and ape remains. This is contrary to the view of most creationists that Lucy is an extinct non-human primate.

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The Genesis Agendum (GA) holds regular lectures in London, Cambridge and Coventry. Details may be found on the GA web site: http://www.genesisagendum.org.uk/

Visit to Northern Ireland

Wednesday 23rd – Wednesday 30th November 2005

Ministry Report by Paul Garner

In November it was my great privilege to visit Northern Ireland to speak on creation – the first such visit by a BCS speaker! It was a busy time, with engagements in Fermanagh, Tyrone and Antrim. Among the opportunities to share the creation message there were visits to schools and colleges, a student lunch meeting, as well as talks in several churches. Here are the highlights:

- *Omagh:* speaking to two religious education classes about the interaction between science and the Christian faith, showing that they should be friends not enemies! Also, speaking to a biology class in the same school.
- *Enniskillen:* talking to sixth form students at a prestigious boys school. This led to a lively question time that could have gone on for longer had the bell not called time on us! The last question was, "Why Christianity and not some other religion?" What an opportunity to explain the significance of the cross and resurrection! Also an assembly to primary school children on 'The Eye – By Chance or Design?'
- *Brookeborough:* a youth fellowship meeting about dinosaurs. It was great to provide these teenagers with biblically-based answers to questions such as "Where did the dinosaurs come from?", "How long ago did they live?" and "Why did they become extinct?"
- *Sion Mills:* a short talk entitled 'A Designer-Label World?' at a youth meeting. There was genuine interest from the youngsters, who listened well to what was said.
- *Mullaghmeen:* speaking about dinosaurs to a Sunday School class, then at the main morning service on 'The Genesis Foundation'.
- *Ballmoney:* an evening service looking at 'The Truth About Human Origins', followed by an after-church fellowship on the significance of Genesis for the gospel and evangelistic outreach.
- *Newtownabbey:* an evangelistic talk on 'Mt St Helens' to about 70 people gathered at Ballycraigy Congregational Church.
- *Belfast:* a lunchtime meeting with students from Queens University. The topic was 'The Design Revolution', looking at intelligent design as an explanation for the origin of living things. Also, a Christian Union meeting at Methodist College, with one student expressing an interest in getting involved in the creation ministry!
- *Groomsport:* midweek meeting with folk from two Presbyterian congregations. An excellent question and answer session followed, with much interest expressed in the creation ministry.

During the visit we faced the whole spectrum of weather – fog, sun, rain, wind and snow! In fact, the snow was responsible for the only real disappointment of the week – low numbers at a public meeting in Enniskillen. The predicted snow began to fall about an hour before the meeting – and continued throughout the evening. Never mind! Those who made it appreciated the talk and, overall, the meetings were a great encouragement.

Thanks must go to my hosts in Fermanagh, Susan-Anne and Francis White, who initially invited me to the province and worked so hard to organize many of the meetings. Thanks are also due to Pastor Steven Curry of Ballymoney and Pastor Robert Beckett of Belfast for putting together the programme in Co. Antrim. I also appreciate Pastor Curry taking me to see the Giant's Causeway on a very cold and windy Monday morning!

By the end of the week I was feeling exhausted, but pleased that the trip had been so worthwhile. It seems likely that a return trip will be possible at some future date. Meanwhile, please pray that the Lord will bless the seed that was sown on this occasion and that it might bear spiritual fruit in the days to come. ■

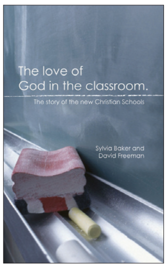
The Giant's Causeway, Co. Antrim. The rocks you see were formed by the catastrophic outpouring of lava in the North Atlantic region. The tightly-spaced columns are a natural consequence of the cooling of the lava flows.

Paul Garner walking on the basalt columns at the Giant's Causeway.

Paul's hosts in Fermanagh, Susan-Anne and Francis White with their daughter Abigail.

Book announcement

The Love of God in the Classroom – The Story of the New Christian Schools
by Sylvia Baker and David Freeman. Christian Focus Publications. 2005.
144 pp. Price £6.99. ISBN 1-84550-048-2.



This little book has been described by one reviewer as a "gem". It tells the stories of seventeen of the approximately 100 new, independent, Christian schools now in existence in the UK. The movement began in a small way in the late 1960s and 70s and until recently has remained largely hidden and ignored, even by the wider Christian church in this country. Now there is much more interest in the so-called 'faith' schools and in the kind of citizens that they might be producing.

The book refers to research that seems to show that Christian schooling prepares young people well for life and that graduates of the schools have happy memories of their school days. It includes many positive testimonies from past pupils and carries a very affirmative foreword written by Baroness Cox.

The new Christian schools, in common with all independent schools, are not subject to the National Curriculum and hence are able to teach from a creationist viewpoint.

They typically would achieve high grades at GCSE with well-informed pupils able to engage in the creation/evolution debate.

The stories recounted in the book are compelling. They describe surprising levels of faith and miraculous answers to prayer. The impact of this movement on the Christian church in the UK is only now beginning to be felt as thousands of graduates of the schools begin to make their mark on society. ■

"the word": your correspondence

Dr Carl Wieland, Managing Director, Answers in Genesis Australia

I greatly appreciated David Tyler's excellent review on Flores Man aka 'The Hobbit'.

However, his statement that "the microcephaly explanation was publicised positively by Wieland", (i.e. by me) requires clarification.

In the very first news item I wrote (for the web) on the subject, I said: "The researchers who discovered the Flores bones apparently think that they are dwarfed descendants of *Homo erectus*. We would agree" (Wieland, 2004a). In fact, a note to that article said, "We are not suggesting that the anatomical features of the Flores woman were simply those of a (miniature) modern type human."

In my subsequent web update (Wieland, 2004b) I did report on the opinions of Adelaide anatomist Henneberg that this was a microcephalic, as well as on the opinion of an Indonesian specialist that it was a dwarfed modern human. However, even though I did not specifically criticize those views (which could be seen as 'positive publicity'), I definitely did not change my own view. I have not ceased being cautiously sceptical of the idea that this was an isolated pathological individual.

In fact, out of concern that some seemed to be misunderstanding my publicizing the microcephaly explanation as personal enthusiasm for it, a date-labelled insertion was made on 1st April 2005, which David may have missed. It reads *inter alia* as follows: "Although the controversy about microcephaly is reported with interest, and highlights the essential humanness of the specimen, the opinion given in the first of our articles on this find is one I still hold, pending further information. I wrote in the addendum to that article, titled 'Soggy dwarf bones': 'We are not suggesting that the anatomical features of the Flores woman were simply those of a (miniature) modern type human. They are those of a (miniature) *Homo erectus*, a variant of the modern type, but within the human kind.'"

All conclusions are tentative, of course, and it is a pity that authorities seem to have acted to decrease the likelihood of many more specimens from the site in the near future. But in general, there is little if any disagreement between David and myself on this 'hobbit' and I commend the review. ■

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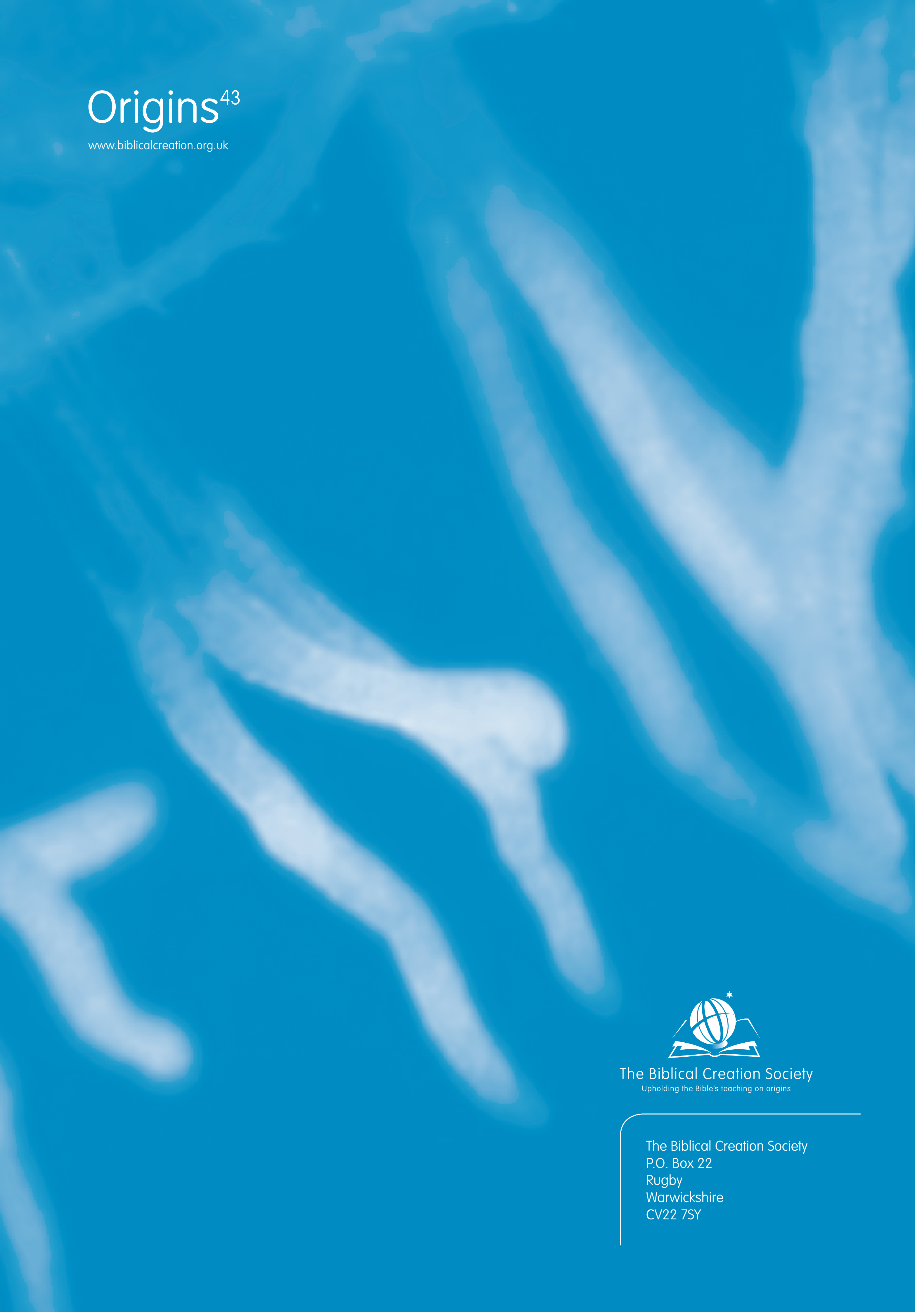

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